

Work Order ID 152621

152621

Page 1

Tuesday, November 01, 2016 1:35:25 PM

Item ID: D6104-003 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Round Billet, 17-4
 Start Date: 11/3/2016 Start Qty: 10.00 ***10*** Cust Item ID:
 Required Date: 11/17/2016 Req'd Qty: 10.00 ***10*** Customer:
 Reference: **DAS 21 9-89**

Approvals: Process Plan: **DAS 21 9-89** Date: **NOV 01 2016** Tooling: Date: Run Start ***NR1***
 QC: Date: SPC (Y/N): Date: Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D6104	Rev B								
100	PURCHASING	0.00							DAS 13 9-89
100									
Purchasing	Memo	0.00							
Purchasing	Issue P/O: 34163 a)Description: S.S round billet b) Ø3.25" x 3.80" longc) Tolerance on all dimensions are +0.030"/-0.000"d) Material: 17-4PH Stainless steel (Ams 5643 or Aisi 630)e)One blank makes 2 partsf) Material certification required								
110	Receive & Inspect for Damage & Mat'l Certs	0.00							
110									
Packaging	Memo	0.03							
Packaging	Ensure material certification is attached								
120	QC6- Inspect dimensions to drawing	0.00							
120									
QC	Memo	0.00							
Quality Control	Ensure Material certification comply to Dwg D6104								

10 **NOV 03 2016** **DAS 13 9-89**
10x SP/6-11-8
10 **16/11/13**

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER :					

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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Identify as per dwg & Stock Location: <u>MAT043</u>	0.00							
130									
Packaging	Memo	0.02				<u>10</u>	<u>0</u>		<u>9/2</u> <u>9-59</u>
Packaging	LOCATION: MAT043								<u>16/11/13</u>
140	QC21- Final Inspection - Work Order Release	0.00							
140									
QC	Memo	0.17					<u>DAS</u> <u>21</u> <u>9-59</u>	<u>NOV 14 2016</u>	
Quality Control									

DAS
21
9-59 NOV 14 2016

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																																													
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Picklist Print

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Work Order ID: 152621

152621

Parent Item: D6104-003

D6104-003

Parent Item Name: Round Billet, 17-4

Start Date: 11/3/2016

Required Date: 11/17/2016

Start Qty: 10.00

Required Qty: 10.00

Comments: IPP B: 01.09.04Revised Step 2 SM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6104-003P		Purchased	No			110	Each	0.0000	1	10			
D6104-003P									**				
17-4 SS Roundbar 3.25"Od													

10x SP/6-118

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

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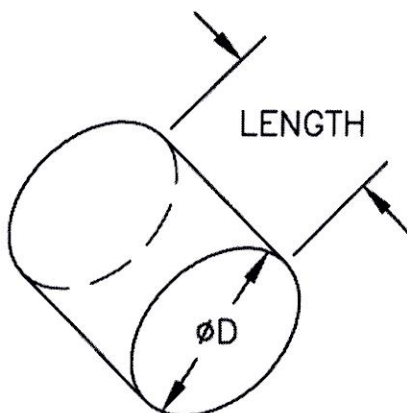


DESIGN <i>RF</i>	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED

02.11.29 *[Signature]*

SPECIFICATION CONTROL DRAWING



SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 152621 MJS
16-11-01

MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRc)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
D6104-005	17-4 PH STAINLESS STEEL	Ø4.00	5.10
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

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Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO34163

Purchase Order Date 11/3/2016

PO Print Date 11/3/2016

Page Number 2 of 3

Order From :
METAUX CASTLE
P.O. BOX 4090 STN A
TORONTO, ONTARIO M5W OE9
CANADA

VU-MET002

Ship To : DART AEROSPACE LTD
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name

Vendor Phone

Ship To Contact

Ship To Phone

Ship Via: Yours ppd

Ship Acct:

Buyer

Customer POID

Customer Tax #

Terms

Currency

FOB

Chantal Lavoie

10127-2607

Net 30

USD

Destination-Collect

Line Total: \$643.00

3	D6102-013P	6061-T6 7.0X6.5X2.0	11/16/2016	20.00	\$31.65	\$633.00
			Yes	Each		
			11/16/2016			

AS PER DWG D6102 REV. D
B152620
SIZE: 7.000" X 6.500" X 2.00" THICK
GRAIN DIRECTION ALONG 6.500"
MATERIAL 6061-T6/T6511 QQ-A-250/11
TOLERANCE AS PER QUOTE +.030"/-.000

Line Total: \$633.00

4	D6104-003P	17-4 SS Roundbar 3.25"Od	11/16/2016	10.00	\$26.70	\$267.00
			Yes	Each		
			11/16/2016			

AS PER DWG D6104 REV. B
B152621
SIZE: 3.25" X 3.80" LONG
MATERIAL: 17-4 PH AS PER AMS 5643 OR AISI 630

NOV 08 2016

DAS
26
9-89

Line Total: \$267.00

Note:

11/3/2016

**Castle Metals®**

A. M. Castle & Co.

PACKING SLIP/
CERTIFICATE OF CONFORMANCE

Page 1 of 2

Shipment No:3120677

Ship From: A. M. CASTLE & CO. 2150 ARGENTIA ROAD MISSISSAUGA, ON L5N 2K7 CAN		Sold To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA		Ship To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CAN		Deliver To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA	
Date Shipped 07-NOV-16	F.O.B. ORIGIN	Freight Terms Prepaid		Carrier MANITOULIN		BOL No 3120677-2	

Shipment Details	Final Destination Branch - TOR
-------------------------	---------------------------------------

Order No 4556141	Line No 1	Item No 42470.MO	Description 3.2500.RD.17CR-4NI.STAINLESS.RT.SOL TR.COND <u>A.132.0000-156.0000</u> <u>CUT TO 3.8 IN (+ .1250/- .0000 IN) - BAND SAW CUTTING</u> SPECIFICATIONS: AMS 5643 ALL PAPERWORK MUST FOLLOW ORDER / CUSTOMER MUST RECEIVE AT TIME OF DELIVERY ALL MATERIAL MUST HAVE IDENTIFYING MARKINGS EX:HEAT #'S Email P/s and certs to: clavoie@dartaero.com
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Purchase Order No 34163	Part Number YOUR ITEM NUMBER: D6104-003	Ordered Qty 10.00 PCS	Invoice Qty 10.00 PCS
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Details	ALL PAPERWORK MUST FOLLOW ORDER / CUSTOMER MUST RECEIVE AT TIME OF DELIVERY ALL MATERIAL MUST HAVE IDENTIFYING MARKINGS EX:HEAT #'S Email P/s and certs to: clavoie@dartaero.com END USER: DART AEROSPACE END USE: COMMERCIAL AIRCRAFT PARTS
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DAS
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9-89

NOV 08 2016

Delivery No. 120648033	Mill NORTH AMERICAN STAINLESS	Heat Number 	Mech Id	PCS 10	Width (IN)	Length (IN)	Shipped Qty(LBS) 89.3327
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Castle Metals®

A. M. Castle & Co.

PACKING SLIP/
CERTIFICATE OF CONFORMANCE

Page 2 of 2

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These commodities/technologies are subject to US Export Administration & US State Dept. Regulations and, if intended for export, were/are exported thereunder. Diversion contrary to US Law is Prohibited.

We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material, including any specifications forming a part of the description. Test reports are on file subject to examination. All claims for defective material are waived unless made in writing to A.M. Castle & Co. within 60 days of the shipment. Material cut to the correct size, or material cut by the customer cannot be returned for credit.

Reviewed by Authorized Castle Metals Representative:

Date:

Name:

Chris Galt



NOV 07 2016

NOV 08 2016

DAS
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9-89



North American Stainless Canada Inc.
740 Imperial Road North
Guelph, ON N1K1Z3
Canada

METALLURGICAL TEST REPORT

6870 Highway 42 East
Ghent, KY 41045-9615
(502) 347-6000

Certificate: 219977 5
Customer: 007209 001
Mail To:
CASTLE METALS
2150 ARGENTIA ROAD
MISSISSAUGA, ON L5N 2K7

Ship To:
CASTLE METALS
2150 ARGENTIA ROAD
MISSISSAUGA, ON L5N 2K7

Date: 9/20/2016 Page: 1
Steel: 630(17-4)
Finish: HR

Your Order: 33467

NAS Order: PN 0070086 01

Corrosion:
Red Ratio: 7.0 :1

PRODUCT DESCRIPTION:

Round Bar, Hot Rolled, Annealed, Rough Turned
UNS S17400; EN 10204 3.1, ASTM A484/15, MACRO OK, AMS 5643T
ASTM A564/13, AMS 2303F, ASME SA564-07, ASTM F899/11
SOL. ANNEALED @ 1900F MIN FOR 1 HR MIN. and air cooled to RT
UT per API6A PSL3, ASTM A388-S1 criteria, UT passed
H900 MECH. PROPERTIES ARE CAPABILITY ONLY*

REMARKS:

COMPLIES W/REQUIREMENTS OF DFAR 252.225-7009 EU DIRECTIVE
2011/65/EU. RoHS. EAF+AOD+CC. NO WELD REPAIR. MELTED AND MFG
IN USA FREE FROM MERCURY AND LOW MELTING ALLOY CONTAMINATION

Product Id	Skid #	Diameter	Size	Weight	-----Length-----	Mark	Pieces	Commodity Code
BI2300 3		3.2500		1,430	144.00	2	1	

CHEMICAL ANALYSIS

CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa) JP(Japan) Lab Accreditation Bureau, ISO/IEC 17025, Certificate# L2323
Chemical Analysis per ASTM A751/14a

HEAT	CM	C %	CB %	CO %	CR %	CU %	MN %	MO %	N %	NI %
096M	US	.0334	.2750	.0945	15.2800	3.0285	.8295	.0940	.0332	4.2540
	P %	S %	SI %	TA %	TI %					
	.0230	.0255	.5510	.0115	.0020					

MECHANICAL PROPERTIES

Product Id	l d o i c r	HB No.	Grain No.	Ferrite %	TS-900CAP KSI	YS-900CAP KSI	E1-900CAP % 4D	RA-900CAP %	RC-900CAP No.	FREQ. No.
BI2300 3	R L	341.0	8.0	.30	202.65	179.94	13.00	43.53	41.0	.20

NAS hereby certifies that the analysis on this certification is correct. Based upon the results and the accuracy of the test methods used, the material meets the specifications stated. These results relate only to the items tested and this report cannot be reproduced, except in its entirety, without the written approval of NAS.

Technical
Dept. Mgr.

KRIS LARK

9/20/2016



North American Stainless Canada Inc.
740 Imperial Road North
Guelph, ON N1K1Z3
Canada

METALLURGICAL TEST REPORT

6870 Highway 42 East
Ghent, KY 41045-9615
(502) 347-6000

Certificate: 219977 5
Customer: 007209 001
Mail To:
CASTLE METALS
2150 ARGENTIA ROAD
MISSISSAUGA, ON L5N 2K7

Ship To:
CASTLE METALS
2150 ARGENTIA ROAD
MISSISSAUGA, ON L5N 2K7

Date: 9/20/2016 Page: 2

Steel: 630(17-4)

Finish: HR

Corrosion:

Red Ratio: 7.0 :1

Your Order: 33467

NAS Order: PN 0070086 01

PRODUCT DESCRIPTION:

Round Bar, Hot Rolled, Annealed, Rough Turned
UNS S17400; EN 10204 3.1, ASTM A484/15, MACRO OK, AMS 5643T
ASTM A564/13, AMS 2303F, ASME SA564-07, ASTM F899/11
SOL. ANNEALED @ 1900F MIN FOR 1 HR MIN. and air cooled to RT
UT per API6A PSL3, ASTM A388-S1 criteria, UT passed
H900 MECH. PROPERTIES ARE CAPABILITY ONLY*

REMARKS:

COMPLIES W/REQUIREMENTS OF DFAR 252.225-7009 EU DIRECTIVE
2011/65/EU. RoHS. EAF+AOD+CC. NO WELD REPAIR. MELTED AND MFG
IN USA FREE FROM MERCURY AND LOW MELTING ALLOY CONTAMINATION

Product Id	Skid #	Diameter	Size	Weight	-----Length-----	Mark	Pieces	Commodity Code
BI2300 3		3.2500		1,430	144.00	2	1	

Lab Accreditation Bureau, ISO/IEC 17025, Certificate# L2323

CHEMICAL ANALYSIS CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa) JP(Japan) Chemical Analysis per ASTM A751/14a

MECHANICAL PROPERTIES

Product Id	l o c a l i d	SEV. No.
BI2300 3	R L	.11

NAS hereby certifies that the analysis on this certification is correct. Based upon the results and the accuracy of the test methods used, the material meets the specifications stated. These results relate only to the items tested and this report cannot be reproduced, except in its entirety, without the written approval of NAS.

Technical
Dept. Mgr.

KRIS LARK

9/20/2016

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: D6104-003
 DATE: 12/11/13

PO / BATCH NO.: 34163/152621

MATERIAL CERT REC'D: yes
 QUANTITY RECEIVED: 10
 QUANTITY INSPECTED: 10
 QUANTITY REJECTED: _____

THICKNESS ORDERED: 03.25
 THICKNESS RECEIVED: 3.28
 SHEET SIZE ORDERED: _____
 SHEET SIZE RECEIVED: _____

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y ☒ N	
CORRECT FINISH	☒ Y N	
CORROSION	Y ☒ N	
CORRECT GRAIN DIRECTION	☒ Y N	
CORRECT MATERIAL	☒ Y N	17-4PH
CORRECT THICKNESS	☒ Y N	3.280
PHOTO REQUIRED	Y ☒ N	
CORRECT MATERIAL	☒ Y N	AMS 5643
CORRECT REF # TO LINK CERT	☒ Y N	HEAT # 096M
CORRECT MATERIAL IDENTIFICATION	☒ Y N	D6104-003
CORRECT M# ON THE MATERIAL	☒ Y N	B152621
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y ☒ N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y ☒ N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
TYPE OF MATERIAL	HRC	HRB	DUR A	DUR D	
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION		ENGINEERING SIGNOFF (if required)	
INSPECTED BY: <u>[Signature]</u> DATE: <u>12/12/13</u>	SIGNED OFF BY: _____ DATE: _____		

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in